

## INTER-STAGE PLASMA SOURCE

### ABSTRACT

A high efficiency plasma pump for use in a plasma processing system that includes a plasma processing device having a first plasma density proximate a processing region and a second plasma density proximate an exit region is disclosed. The plasma pump includes an inter-stage plasma (ISP) source fluidly coupled to the plasma processing device proximate the exit region, the ISP source comprising an inter-stage plasma region having a third plasma density; and a plasma pump fluidly coupled to the ISP, the plasma pump having a fourth plasma density, wherein pumping speed is dependent upon the third plasma density and the fourth plasma density. The ISP source increasing the third plasma density to increase the pumping efficiency.